

REMARKS/ARGUMENTS

Claims 1, 2 and 10-27 are now pending in the present application. Claims 1 and 2 have been currently amended, Claims 3-8 have been canceled, and new Claims 10-27 have been added. Claim 9 was previously canceled in an earlier amendment. Support for the amended and new claims can be found throughout the specification and in the original claims.

Claim 1 has been amended to specify that the core of the grafted rubbery elastomer comprises a polymer prepared from alkyl acrylate or alkyl methacrylate monomers; alkyl acrylate or alkyl methacrylate monomers, each with one or more additional monomers; or a polysiloxane rubber; and wherein, the composition does not contain a phosphate-containing flame retardant and does not contain a halogen flame retardant containing Cl, Br or I. Particular, support for amended Claim 1 can be found on pages 1-5, 10-13, 28-32 and 35 of the specification. Particular support for amended Claim 2 and new Claims 10-15 can be found in the original Claims and on pages 18-19 of the specification. Particular support for new Claims 16-27 can be found on pages 10-15 of the specification. No new matter is believed to have been introduced by the amendments or the new claims.

The specification was amended to clarify that a "non-halogen" flame retardant is a flame retardant that does not contain a halogen other than fluorine; thus does not contain Cl, Br or I. Support for this amendment can be found throughout the specification, and in particular, on pages 1-5, 32 and 35 of the specification.

Applicants wish to thank the Examiner for the courteous discussion on January 6, 2004. At that time, Applicants discussed that improved impact strength was observed for the specifically modified flame-retardant compositions. The following is intended to expand upon the discussion with the Examiner.

Claim Rejections Under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a)

The Examiner rejected Claims 1, 3 and 5-8 under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over, EP 0 289 828 to Laughner et al. (hereinafter Laughner). Applicants respectfully traverse this rejection for the following reasons.

The Laughner reference is directed to an impact resistant, fire retardant carbonate polymer composition comprising (a) one or more carbonate polymers, (b) a rubbery polymer consisting of a graft of styrene/methacrylate copolymer on a butadiene homopolymer or copolymer core and (c) a fibril forming polytetrafluoroethylene (page 2, lines 40-47). Additional components, such as metal salts of sulfur compounds and chlorine or bromine containing compounds may be included to improve fire retardant and other properties (see page 3, lines 41-43). The rubbery polymer component has a Tg less than 20°C and sufficient residual unsaturation to result in improved performance under burning conditions compared to carbonate polymer formulations using saturated rubbers (page 3, lines 29-31). Laughner does not desire the use of highly saturated rubbery polymers, such as acrylate rubbers and hydrogenated polydiolefin based rubbers, since these rubbers do not provide the advantageous resistance to the effects of burning achieved by the ethylenic unsaturated rubbers of the formulations disclosed in Laughner (see page 3, lines 20-28). Thus, Laughner teaches away from the use of acrylate rubbers and other highly saturated rubbery polymers in its flame retardant compositions. Moreover, Laughner fails to disclose the combination of the grafted rubbery elastomer as recited in Claim 1 and the lack of a halogen flame retardant that contains Cl, Br or I.

Applicants canceled Claims 3, 5-8 and added new Claims 10, 12-15. Claim 1 has been amended to recite a flame-retardant composition that comprises a core/shell grafted

rubbery elastomer, wherein the core of the grafted rubbery elastomer comprises a polymer prepared from alkyl acrylate or alkyl methacrylate monomers; alkyl acrylate or alkyl methacrylate monomers, each with one or more additional monomers; or a polysiloxane rubber; and wherein the composition does not contain a phosphate-containing flame retardant and does not contain a halogen flame retardant containing Cl, Br or I. The combination of components in Claim 1 provides improved impact strength compared to a composition containing a comparative SBS-type graft copolymer (see Tables 1-1 to 1-3 and page 31 of the specification). In addition, the combination of components in Claim 1 achieves excellent flame retardancy, moldability, thermal stability, wet heat resistance and recyclability.

Laughner does not teach or suggest a flame-retardant composition as claimed in pending Claim 1. Moreover, Laughner teaches away from the use of acrylate rubbers and other highly saturated rubbery polymers in its flame retardant compositions. In addition, Laughner does not teach or suggest the combination of the grafted rubbery elastomer as recited in Claim 1 and the lack of a halogen flame retardant that contains Cl, Br or I. Laughner discloses formulations that contain highly unsaturated rubber elastomers and flame retardants that contain halogens other than fluorine (see pages 4-7). Laughner discloses, only as a comparative example, a methacrylate/styrene grafted butyl acrylate (Paraloid® 3330) rubber used in combination with TBBA (tetrabromo bisphenol A) (see Page 4, line 50 – page 5, line 29).

For at least the above reasons, Laughner does not teach or suggest the present invention as now claimed. Therefore, the rejection should be withdrawn.

The Examiner rejected Claims 1-8 under 35 U.S.C. § 103(a), as obvious over Laughner and U.S. Patent No. 3,971,756 to Bialous et al. (hereinafter Bialous) or EP 0 902

060 to Serizawa (hereinafter Serizawa). Applicants respectfully traverse this rejection for the following reasons.

Applicants canceled Claims 3-8 and added new Claims 10-15. As discussed above Laughner teaches away from the use of acrylate rubbers and other highly saturated rubbery polymers in its flame retardant compositions. In addition, Laughner does not teach or suggest the combination of the grafted rubbery elastomer as recited in Claim 1 and the lack of a halogen flame retardant containing Cl, Br or I. Bialous discloses a flame retardant polycarbonate composition of an aromatic polymer admixed with a metal salt and a siloxane (see Abstract). Preferred metal salts included chlorinated and brominated sulfonate salts (see column 4, lines 32-52). Bialous does not teach or suggest the grafted rubbery elastomer as recited in Claim 1. In addition, Bialous does not teach or suggest a composition that comprises a grafted rubbery elastomer as recited in Claim 1 and the lack of a halogen flame retardant containing Cl, Br or I.

Serizawa discloses flame retardant resins containing a silicon resin and a non-silicon resin having an aromatic ring (see Abstract). The non-silicon resin may be an aromatic polycarbonate resin, alloys of aromatic polycarbonate resin, copolymers of acrylonitrile-butadiene-styrene (ABS), polystyrene resin, an epoxy resin having an aromatic ring, a phenol resin having an aromatic ring, or mixtures thereof (see page 3, lines 53-58). The compositions can be used without a further flame retardant, such as halogen compounds, combinations of halogen compounds with antimony oxide and phosphorus compounds (see page 20, lines 51-54). However, Serizawa does not teach or suggest the grafted rubbery elastomer as recited in Claim 1. In addition, Serizawa does not teach or suggest the combination of the grafted rubbery elastomer as recited in Claim 1 and the lack of a halogen flame retardant containing Cl, Br or I.

Neither Bialous nor Serizawa overcome the deficiencies in the Laughner reference. Laughner and Bialous or Serizawa do not teach or suggest the invention as now claimed. Therefore, the rejection should be withdrawn.

The Examiner rejected Claims 1, 3, and 5-8 under 35 U.S.C. § 103(a), as obvious over Laughner and JP 10-306208 to Michio (hereinafter Michio). Applicants respectfully traverse this rejection for the following reasons.

As discussed above, Laughner teaches away from the use of acrylate rubbers and highly saturated rubbery polymers in its flame retardant compositions. In addition, Laughner does not teach or suggest the combination of the grafted rubbery elastomer as recited in Claim 1 and the lack of a halogen flame retardant containing Cl, Br or I. Michio is directed towards a polycarbonate resin composition comprising an aromatic polycarbonate, a phosphorous flame base retardant, a polyfluoroethylene, a metal sulfonate and a multi-layer structural polymer having an outermost shell layer composed of an alkyl methacrylate based polymer (see Abstract). The phosphorous flame base retardant is a Lynn system based on non-halogen phosphate-containing compounds (see sections [0010]-[0017]). The multilayer-structure polymer includes a polyalkylacrylate core / polymethylmethacrylate shell system and a siloxane content polyalkylacrylate core / polystyrene acrylonitrile shell system copolymer (see section [0036]). Michio does not teach or suggest the combination of the grafted rubbery elastomer as recited in Claim 1 and the lack of a phosphate-containing flame retardant.

Therefore, neither Laughner nor Michio, alone or in combination, teach or suggest the combination of the grafted rubbery elastomer as recited in Claim 1, the lack of a halogen flame retardant containing Cl, Br or I, and the lack of a phosphate-containing flame retardant.

Therefore, Laughner and Michio do not teach or suggest the invention as now claimed.

Therefore, the rejection should be withdrawn.

The Examiner rejected Claims 1-3 and 5-8 under 35 U.S.C. § 103(a) as unpatentable over WO 94/11429 to Ogoe et al. (hereinafter Ogoe), in view of Laughner. Applicants respectfully traverse this rejection for the following reasons.

The Ogoe reference is directed to a blended composition containing polycarbonate, polyester, an acrylate polymer and/or a styrenic thermoplastic resin, polytetrafluoroethylene, an acid acceptor and a halogenated aryl phosphate (see Abstract). The composition may optionally contain an elastomeric impact modifier (see pages 3 and 18). An example of an impact modifier includes a core-shell graft copolymer which can be based on either a diene rubber, an acrylate rubber or on mixtures thereof (see page 22). The halogenated aryl phosphate may contain fluorine, chlorine, bromine and/or iodine atoms (see page 17).

Therefore, Ogoe does not teach or suggest the combination of the grafted rubbery elastomer as recited in Claim 1, the lack of a halogen flame retardant containing Cl, Br or I, and the lack of a phosphate-containing flame retardant. As stated above, Laughner does not teach or suggest the grafted rubbery elastomer as recited in Claim 1 and the lack of a halogen flame retardant containing Cl, Br or I. Moreover Laughner teaches away from the use of acrylate rubbers and highly saturated rubbery polymers in its flame retardant compositions. Therefore, Laughner does not overcome the deficiencies in Ogoe. Therefore, Ogoe, in view of Laughner, does not teach or suggest the invention as now claimed. Thus, the rejection should be withdrawn.

The Examiner rejected Claims 1, 3 and 5-8 under 35 U.S.C. § 102(b), as anticipated by, or in the alternative under, 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 4,710,534

to Liu (hereinafter Liu). Applicants respectfully traverse this rejection for the following reasons.

The Liu reference is directed to a composition comprising an aromatic polycarbonate, a polyalkylene terephthalate, an impact modifier selected from an olefin diene copolymer and an acrylonitrile-butadiene alkenylaromatic copolymer, and an effective amount of the flame retardant system to maintain a particular VO rating (see Abstract). Liu discloses several olefin diene terpolymers and acrylonitrile-butadiene alkenylaromatic compounds in column 4, line 49 to column 5, line 26. The flame retardant system generally includes a halogenated, preferably a brominated, covalent compound and a flame retardant salt (see column 5, lines 27-30). Liu does not teach or suggest the grafted rubbery elastomer as claimed in pending Claim 1. Therefore this reference does not teach or suggest the invention as now claimed. Therefore, the rejection should be withdrawn.

The Examiner rejected Claims 1, 3, and 5-8 under 35 U.S.C. § 103(a), as obvious over Liu and Michio. Applicants respectfully traverse this rejection for the following reasons.

As stated above Liu does not teach or suggest the grafted rubbery elastomer as claimed in pending Claim 1. Michio does not teach or suggest the combination of the grafted rubbery elastomer as recited in Claim 1 and the lack of a phosphate-containing flame retardant. Therefore, neither Liu nor Michio, alone or in combination, teach or suggest the combination of the grafted rubbery elastomer as recited in Claim 1, and the lack of a phosphate-containing flame retardant. Therefore, Applicants respectfully submit that Liu and Michio do not teach or suggest the invention as now claimed. Therefore, the rejection should be withdrawn.

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Claim Rejections Under 35 U.S.C. § 112

The Examiner rejected Claims 1 and 3-8 under 35 U.S.C. § 112, second paragraph, as indefinite. Applicants respectfully traverse this rejection for the following reasons.

Applicants have amended Claim 1 to remove the term "type," rendering this claim definite. Applicants have canceled Claims 3-8, and added new Claims 10-15. New Claims 10-15 replace the canceled claims, but also contain inherent amendments relative to the respective canceled claims. Applicants submit that each new claim has a proper antecedent basis, and is definite. Therefore, for at least the above reasons, Applicants respectfully request the withdrawal of this rejection.

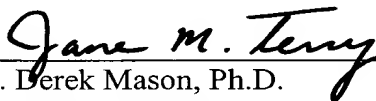
Applicants submit that the application is now in condition for allowance, and early notice of such action is respectfully requested.

Respectfully submitted,

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